

Serket (1998) vol. 6(1): 1-37.

Arachnida of Egypt. I. Order Solpugida

Hisham K. El-Hennawy
41, El-Manteqa El-Rabia St., Heliopolis,
Cairo 11341, Egypt

Introduction

In 1825, four species of Solpugida were recorded, for the first time, from Egypt by Audouin. Two species of them were recorded again by O.Pickard-Cambridge (1870) from Sinai. Simon (1880) described two new genera (*Blossia* and *Barrus*) for two new species from a place near Alexandria, to add two other families (Daesiidae and Karschiidae) to the records from Egypt. The same author (Simon, 1899) recorded another species from Wadi Natron. Tullgren (1909) added a third species to the records of Sinai, with another species from Tourah (near Cairo). Roewer (1934) in his historical work on the world's Solpugida, added six genera and fifteen species to the records of Egypt (including a new genus and 5 species new to science). In 1939, Whittick (Roewer, 1941) described a new species of *Galeodes* from El-Fayum. In 1953, Lawrence confirmed the recording of two species of *Rhagodes* from Cairo and Siwa, depending upon specimens in the collections of the British Museum (Natural History). Turk (1960) described two new species of *Galeodes* from Qena, their types were preserved in the collections of the Hebrew University of Jerusalem. Benoit (1964) recorded three species from two other localities in Egypt.

In this study, 27 species are recorded, classified within 12 genera in 5 families. Eleven species are endemic, only in Egypt.

The diagnoses of the order and families are those of Muma (1982). The key to families is adopted from El-Hennawy (1990). The keys to genera and species are adopted from the diagnoses of Roewer (1934 & 1941) in addition to Turk (1960).

Abbreviations: D = description, *f* = female, *m* = male, N = note,
Ref = references, {T} = type

Order Solpugida

Diagnosis of Order Solpugida :

Solpugids, often referred to as solifugids, are predatory arachnids. The order is distinguished from other arachnid groups by the massive, forwardly projecting, chelate chelicerae. The divided prosoma bears a pair of anteriorly located simple eyes on a headlike propeltidium. The elongate, leglike pedipalpi are provided with tarsal adhesive organs. The legs have seven segments; legs 2, 3, and 4 have divided trochanters, and leg 4 has two to five racket organs or malleoli located ventrally on the coxae and trochanters. There is no sternum. The opisthosoma or abdomen has 11 segments. There are three pairs of ventral tracheal stigmata, one between the coxae of legs 2 and 3, and one each on the posterior margins of the third and fourth sternites. There is one unpaired ventral stigma on the posterior margin of the fifth sternite (Figs. 1,2,3).

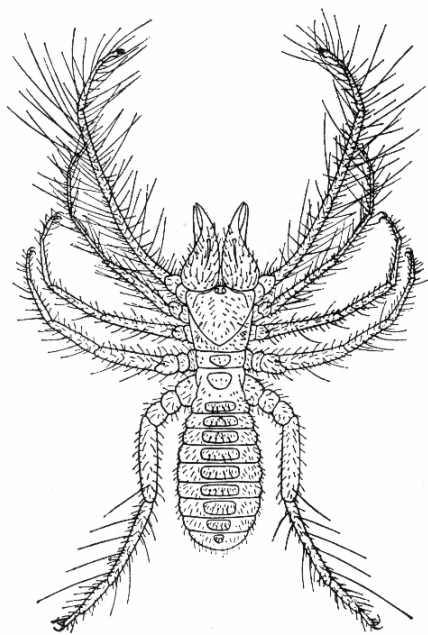
The identification of solpugid species depends mainly on the dentition of chelicerae (Fig. 4), legs' spination (Fig. 5), kinds of bristles and ctenidia (Figs. 5,6,7).

The male and female genital openings are on the second abdominal sternite, protected by two plates or opercula. The female chelicerae are strongly dentate. The male chelicerae are dentate but often modified, the immovable or fixed finger provided with a variously located and developed flagellum.

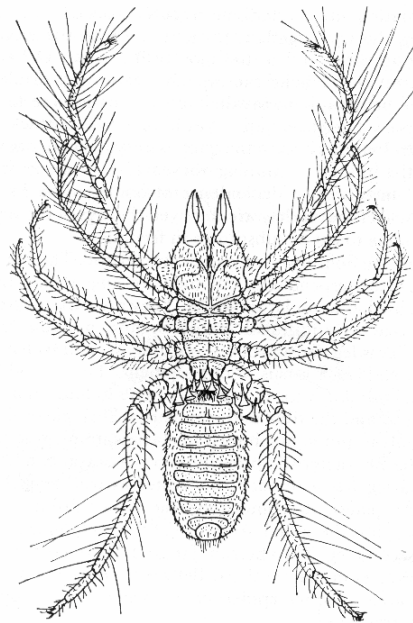
The long-legged male solpugids run rapidly over the surface of the ground, but females, especially when gravid or pregnant, are somewhat slower. All studied species are oviparous, laying masses of oval to round eggs in subterranean burrows. The eggs take several hours to as long as

4 weeks to hatch into helpless incomplete solpugids, known as embryos, first larvae, or postembryos.

Solpugids are mainly confined to arid areas and deserts of the tropical and subtropical regions of the world. When found in humid areas, they are usually restricted to well-drained sands or soils which provide xeric conditions in humid or mesic areas. Although they have been recorded from Tierra del Fuego in South America, South Africa, Canada, and the Gobi Desert in Asia, there are no known representatives from Australia or New Zealand. There are 12 uniquely geographically distributed families and over 900 species.



Solifugae; dorsal aspect. Species *Galeodes arabs*.
(After Savory, 1977. fig.99 p.234)



Solifugae; ventral aspect. Species, *Galeodes arabs*.
(After Savory, 1977. fig.104 p.240)

Fig. 1. *Galeodes arabs* dorsal and ventral view (After Savory, 1977)

Key to Solpugid Families

1. Anus : ventrally located

Family RHAGODIDAE

Tarsal segmentation : 1-1-1-1

Heavy-bodied; short-legged; small to large (10-60 mm)

Leg 1 : tarsi : with a pretarsus + 2 claws,

metatarsi : with a dense ventral clothing of short spinelike setae

Male cheliceral flagellum : paraxially immovable; composed of
2 flattened, curled, setae that form a nearly complete, slightly
curved, truncate, hornlike tube on the mesial surface

Female genital opercula : not differentiated from other abdominal sternites and not specifically variable

Distribution : northeastern Africa, southwestern Asia, and Near East
[26 genera, 91 species]

-. Anus : terminally located ...2

2. Tarsal segmentation : 1-4-4-(6-7) **Family SOLPUGIDAE**

Long-legged; small to large (8-60 mm)

Leg 1 : tarsi : without claws

Male cheliceral flagellum : paraxially immovable; mesodorsal to dorsal, whiplike structure separated from the fixed cheliceral finger by a suture

Female genital opercula : indistinctly differentiated from other abdominal sternites, and although they are some-times variable from one genus to another, they are not specifically so

Distribution : predominantly in Africa
[23 genera, >200 species]

-. Tarsal segmentation : 1-1-1-1 to 1-2-2-4 ...3

3. Tarsal claws of legs 2 to 4 : setaceous **Family GALEODIDAE**

Tarsal segmentation : 1-2-2-3

Long-legged; small to large (12-70 mm)

Leg 1 : tarsi : without claws or with 1 or 2 claws

Male cheliceral flagellum : paraxially movable; a single, capitate (terminally enlarged) seta located on the mesial surface

Female genital opercula : not differentiated from other abdominal sternites and not specifically variable

Distribution : northern Africa, and Asia
[4 genera, 180 species]

-. Tarsal claws of legs 2 to 4 : smooth ...4

4. Leg 1 : tarsi : without claws **Family DAESIIDAE**

Tarsal segmentation : 1-1-1-1 to 1-2-2-4

Long-legged; tiny to moderate-sized (6-23 mm)

Male cheliceral flagellum : paraxially movable, ovate to irregular membranous structure attached to the mesial surface by a disk

Female genital opercula : not differentiated from other abdominal sternites and not specifically variable

Propeltidium : exterior lobes : fused

Distribution : Africa, southern Europe, Near East, and South America
[7 subfamilies, 34 genera, 182 species]

-. Leg 1 : tarsi : with 1 or 2 claws

Tarsal segmentation : 1-1-1-1

Small to moderate-sized (8-26 mm); long-legged

Male cheliceral flagellum : paraxially immovable; fanlike to coiled, whiplike seta located on the mesial surface, with associated modified setae and a dorsal cheliceral horn

Female genital opercula : differentiated from other abdominal sternites and specifically variable

Propeltidium : exterior lobes : posteriorly fused

Distribution : Asia and Near East to southeastern Europe and northwestern Africa

[5 genera, 41 species]

Family KARSCHIIDAE

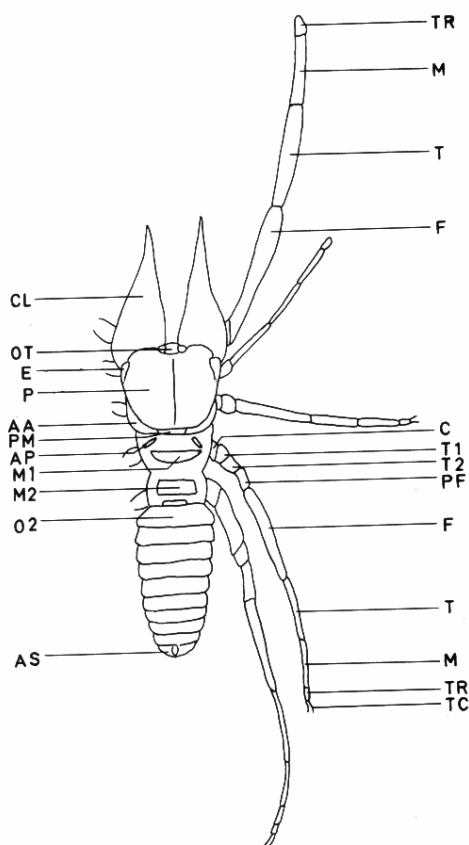


Fig. 3: *Blossia spinicornis* Lawr. ventral view. C = coxa; CT = ctenidium; GS = genital sternite; MA = malleolus; 1OS = first opisthosomal sternite; 1PS-3PS = first, second and third post-genital sternites; T1 and T2 = first and second trochanters. (After Wharton, 1981. fig.2 p.8)

Fig. 2: *Blossia* sp., dorsal view. AA = arcus anterior; AP = arcus posterior; AS = anal segment; C = coxa; CL = chelicera; E = exterior lobe of prosoma; F = femur; M = metatarsus; M1 =

mesopeltidium; M2 = metapeltidium; O2 = second opisthosomal tergite; OT = ocular tubercle; P = propeltidium; PF = prefemur; PM = *plagula mediana*; T = tibia; T1 and T2 = first and second trochanters; TC = tarsal claw; TR = tarsus. (After Wharton, 1981. fig.1 p.7)

Fig. 4 *Galeodes araneoides*, female,
left chelicera, prolaterally
HZ = central tooth VZ = fore tooth
WZ = cheek-teeth ZZ = intermediate
tooth. (After Roewer, 1934. fig.47
p.52)

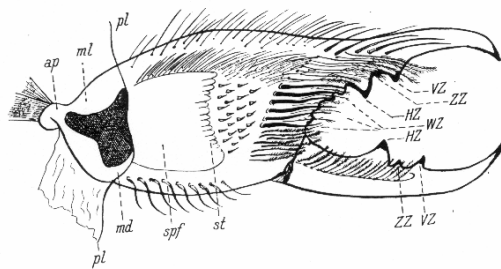


Fig. 5 *Rhagodima* sp., metatarsus and
tarsus III : b = bristles d1,2 = spines db
= spinous-bristles sh = sense hair. (After
Roewer, 1934. fig.102 p.122)

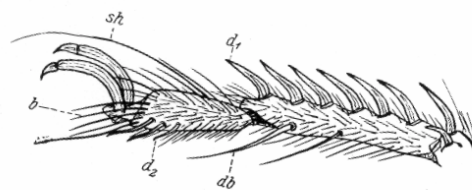


Fig. 6 Plantar-bristles of male tarsus 4 and opisthosomal ctenidia of Galeodidae in
their 4 typical forms : a = needle-like (type 1) b = spindle-shaped (type 2)
c = acutely clubbed (type 3) d = obtusely clavate (type 4).
(After Roewer, 1934. fig.316 p.511)

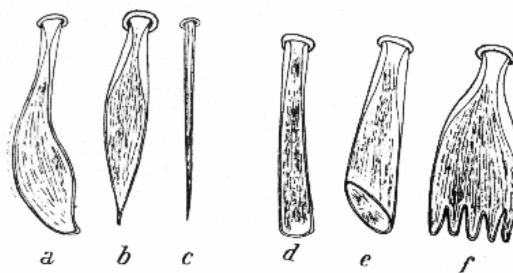


Fig. 7 Ctenidia of opisthosomal sternites :
a = clavate b = spindle-shaped c = needle-like d = staff shaped
e = obtusely clavate f = leaf-like. (After Roewer, 1934. fig.110 p.128)

Family Daesiidae

Diagnosis of the family :

Tiny to moderate-sized (6-23 mm), long-legged solpugids with a terminal anus. The exterior lobes of the propeltidium are fused. The tarsus of leg 1 lacks claws. The tarsal segmentation of legs 1 to 4 varies from 1-1-1-1 to 1-2-2-4, and the tarsal claws of legs 2 to 4 are smooth. The male flagellum is a paraxially movable, ovate to irregular, membranous structure attached to the mesial surface by a disk. The female genital opercula are not differentiated from other abdominal sternites and are not interspecifically variable.

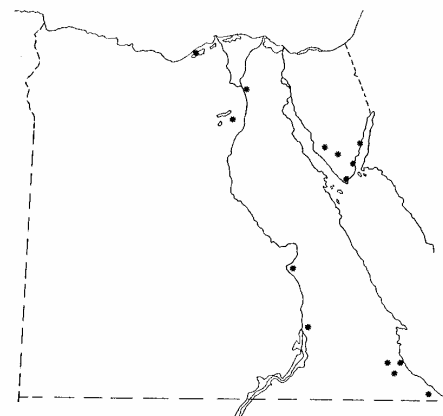
Although the reddish-brown, violet, purple, and black distinctive markings of most genera and species indicate that this family might be predominantly diurnal, *Blossiola* and *Biton* are known to be nocturnal. The biology and ecology of this family are unknown.

The family is distributed throughout Africa, southern Europe, the Near East, and South America. C.F. Roewer recognized 6 subfamilies, 26 genera, 114 species, and several subspecies. These figures now stand at 7 subfamilies, 34 genera, 182 species, and numerous subspecies. Recent workers have repeatedly criticized Roewer's generic diagnostic characters as unusable or invalid, and a generic revision is needed.

Among Roewer's larger genera are : *Hemiblossia*, *Blossiola*, *Gluviopsis*, and *Biton*.

Five species of 4 genera are recorded from Egypt.

Distribution map I.



Distribution Map of Daesiidae in Egypt

Map I.

Key to Genera :

1. Tarsi of leg 4: 4-segmented; tarsi of legs 2 and 3: 2-segmented ***Biton***
- . Tarsi of leg 4: 1 or 2-segmented; tarsi of legs 2 and 3: 1-segmented ...2
2. Tarsi of leg 4: 1-segmented ***Gnosippus***
- . Tarsi of leg 4: 2-segmented ...3
3. Tarsi of legs 2 and 3 with 2.2.2.2 ventral spines ***Blossia***

-. Tarsi of legs 2 and 3 with 1.2.2.2 ventral spines

Blossiola

Genus *Biton* Karsch, 1880

C.L.Koch, 1842 p.355 (sub *Gluvia* part.); Karsch, 1880 p.234 (sub *Daesia* and *Biton*); Simon, 1879 p.144 (sub *Datames*), 1882 p.252 and 253 (sub *Biton*); 1885 p.42 and 46 (sub *Biton*); Pocock, 1896 p.185, 1897 p.394 and 1898 p.522 (sub *Biton*); Purcell, 1899 p. 391-393 (sub *Daesia*); Kraepelin, 1899 p.227 and 1901 p.88 (sub *Daesia*).

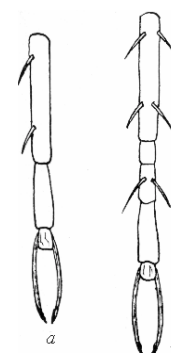
Genotype: *Biton ehrenbergi* Karsch, 1880

Diagnosis: Daesiinae, with tarsus 2 and 3 ventrally with 1.1/0 spines and tarsus 4 ventrally with 2.2/0/2/0 spines (Fig. 8 a,b). Opisthosoma ventrally at female always without, at male with or without ctenidia. Metatarsus 2-4 ventrally always with 1.2 spinous-bristles.

38 species from Africa, Asia and South-east Europe.

Fig. 8 *Biton*, ventral spination. a = tarsus 2 and 3.

b = tarsus 4. (After Roewer, 1934. fig.274 b,i p.387)



Key to males :

Common characters: Chelicerae: movable finger with 1 front, 1 or 2 small intermediate and 1 big main tooth; edge of immovable finger forms a basin behind its tip, in which the fore tooth of the movable finger almost settles (Fig. 9 b1,c); immovable finger without fore teeth; the first tooth of the immovable finger is the main tooth or the short intermediate tooth which lies before its base (Fig. 9 b1,c).

1. Chelicerae: immovable finger without intermediate teeth, with a main tooth and with 4 prolateral and 4 lateral cheek-teeth; set of teeth and flagellum (Fig. 9 b1,b2); Pedipalps ventrally on metatarsus with 1.2.2.2 true spines and tarsus with 1 prolateral spine; Opisthosoma ventrally without ctenidia; Colouration pale yellow; Propeltidium in front and both sides light brown, legs yellow, other parts brown, pedipalps on apical femur, whole tibia, metatarsus and tarsus strongly browned, often almost black; Body length 14-18 mm *B. ehrenbergi*

-. Chelicerae: immovable finger with 1 small intermediate tooth before the main tooth; set of teeth and flagellum (Fig. 9 c); Pedipalps only with bristles, tarsus without spines; Opisthosoma ventrally without ctenidia; Colouration rusty yellow, opisthosomal tergites with 3 narrow yellow

longitudinal stripes; Legs strongly brown; Pedipalps from the femur till its end quite brown; Body length 13 mm *B. bellulus*

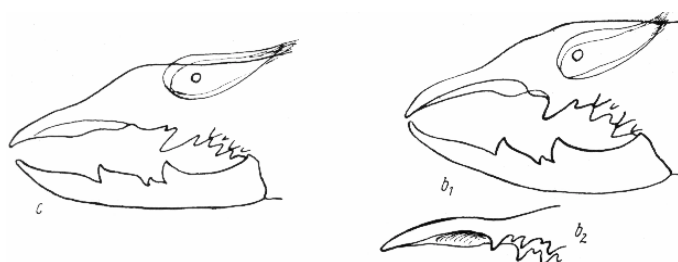


Fig. 9 Prolateral view of male right chelicera.
b1 = *Biton ehrenbergi* (b2 = tip of immovable finger oblique-lateral) c = *Biton bellulus*.
(After Roewer, 1934. fig.275 b1-2,c p.389)

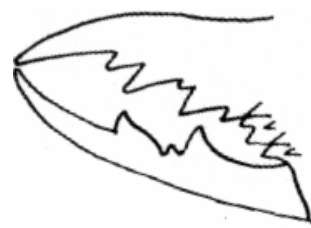


Fig. 10 *Biton ehrenbergi*, female, right chelicera, prolaterally. (After Roewer, 1934. fig.278 i p.398)

Key to females :

Common characters: Pedipalps without true spines on metatarsus, this at most with more or less stand out spinous-bristles occupied; The first fore tooth of the cheliceral immovable finger distinctly smaller than the second fore tooth.

1. Chelicerae: quite uniformly rusty yellow, not with dark brown longitudinal stripes; its dentition (Fig. 10); Pedipalps on tibia, metatarsus and tarsus uniformly brown, distally darker; Opisthosomal tergites with more or less distinct, brown median stripe; Body length 18 mm *B. ehrenbergi*
- . Chelicerae dorsally with 2 dark brown longitudinal stripes (often with a third lateral one); Opisthosomal tergites with 3 brownish longitudinal stripes; Body length 15 mm *B. bellulus*

Biton bellulus (Pocock, 1902) (Fig. 9 c)

Synonyms: *Daesia b.* Pocock, 1902

[Roewer, 1934 p.402]

World Distribution: Egypt.

Endemic Species

Local Distribution: Egypt: Wadi Sinkat ?.

Ref: 1. *B.b.* Roewer, 1934 pp.391,401,402 fig.275 c *Dmf* Wadi Sinkat?

Biton ehrenbergi Karsch, 1880 {T} (Figs. 9 b1,b2, 10)

Synonyms: *Daesia e.* Kraepelin, 1901 [Roewer, 1934 p.402]

World Distribution: Cyprus, Greece, Egypt, Ethiopia, Palestine, Saudi Arabia, Somalia, Sudan, Tunisia.

Local Distribution: Egypt: Cairo, El-Fayum, Luxor, Elephantine (Assuan).

- Ref: 1. *B.e.* Roewer, 1934 pp.390,391,400,402 fig.275 b1-b2 *Dmf*
Elephantine, Luxor, Cairo, El-Fayum
2. *B.e.* Roewer, 1941 p.140 N Palestine, Somalia
3. *B.e.* Benoit, 1964 pp.96-97 N Cairo, Elephantine (Assuan),
El-Fayum, Luxor
4. *B.e.* Delle Cave & Simonetta, 1971 pp.44-45 N

Genus *Blossia* Simon, 1880

Simon, 1880 p.399; Kraepelin, 1901 p.101 (part).

Genotype: *Blossia spinosa* Simon, 1880

Diagnosis: Blossiinae, with metatarsus 2 and 3 dorsally with a longitudinal row of 1.1.1 spines, tarsus 2 and 3 ventrally with 2.2.2.2 spines and tarsus 4 ventrally with 2.2.2/2.2 spines.

3 species from north and east Africa.

Blossia spinosa Simon, 1880 {T} (Fig. 11 a1,a2)

World Distribution: Algeria, Egypt, Palestine, Sudan.

Local Distribution: Egypt: west of Alexandria, Upper Egypt ?.

- Ref: 1. *B.s.* Simon, 1880 p.400 *Dm* near Mex, between the sea and the western horn of lake Mariout (10-14 km west of Alexandria)
2. *B.s.* Roewer, 1934 pp.371-372 fig.265 a1-a2 *Dmf* Upper Egypt? (Sudan)
3. *B.s.* Levy & Shulov, 1964 p.106 N Palestine

Habitat : It was found near the Mediterranean sea shore.

Diagnosis: Pedipalps: only metatarsus ventrally with 2.2.2 spines and tibia with cylindrical-bristles; Opisthosoma: stigmal sternite with 2-3:2-3 ctenidia (Fig. 11 a2); Colouration: rusty yellow, only metatarsus and tarsus of pedipalps dark brown; Male: Cheliceral dentition and flagellum (Fig. 11 a1); Body length: 12 mm; Female: Chelicerae: immovable finger with 3 equal in size cheek-teeth; Body length: 12-14 mm.

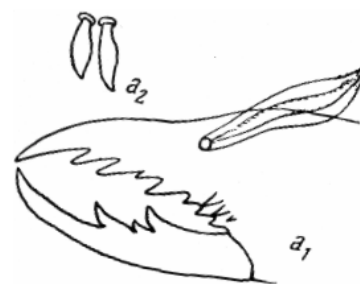


Fig. 11 *Blossia spinosa* male

a1 = right chelicera, prolaterally.

a2 = 2 opisthosomal ctenidia.

(After Roewer, 1934. fig.265 a1-2 p.371)

Genus *Blossiola* Roewer, 1934

Purcell, 1902 pp.213,214,...; Kraepelin, 1908 p.275-278 and 1914 p.128; Hewitt, 1919 p.56; Lawrence, 1928 p.267 (all sub *Blossia*).

Genotype: *Blossia unguicornis* Purcell, 1902

Diagnosis: Blossiinae, with metatarsus 2 and 3 dorsally with a longitudinal row of 1.1.1 spines, tarsus 2 and 3 ventrally with 1.2.2.2 spines and tarsus 4 ventrally with 2.2.2/2.2 spines.

30 species from north Africa, Sudan, east and south Africa, and rarely from Arabia.

Blossiola aegyptiaca Roewer, 1934 (Fig. 12)

World Distribution: Egypt, Palestine.

Local Distribution: Egypt: Upper Egypt.

Ref: 1. *B.a.* Roewer, 1934 pp.366,370 fig.264 a Df Upper Egypt (in Desert)

2. *B.a.* Levy & Shulov, 1964 p.106 N Palestine

Habitat : It was found in desert.

Diagnosis: Female only; Chelicerae: Immobile finger with 4 lateral and 4 prolateral cheek-teeth (Fig. 12); Pedipalps: tibia and metatarsus ventrally with 2.2.2.2.2 spines; Opisthosoma: without ctenidia; Colouration: body and appendages uniformly rusty yellow; Body length: 10 mm.

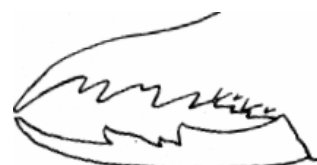


Fig. 12 *Blossiola aegyptiaca* female right chelicera, prolaterally. (After Roewer, 1934. fig.264 a p.367)

Genus *Gnosippus* Karsch, 1880

Karsch, 1880 p.461; Kraepelin, 1899 p.231 and 1901 p.100

Genotype: *Gnosippus klunzingeri* Karsch, 1880

Diagnosis: Gnosippinae, with metatarsus 2 and 3 dorsally with a longitudinal row of 5 spines, tarsus 2 and 3 ventrally with 1.2.2.2.2 spines and tarsus 4 ventrally with 2.2.2.2.2.2 spines; Cheliceral dentition: typical Daesiidae in females (Fig. 13 a3) and greatly differentiated in males of different species; Pedipalps: metatarsus and tarsus ventrally with spines and numerous cylindrical-bristles; Opisthosomal sternites: partly with ctenidia.

3 species from Lower Egypt, Syria and Arabia.

Gnosippus klunzingeri Karsch, 1880 {T} (Figs. 13, 14)

World Distribution: Egypt.

Endemic Species

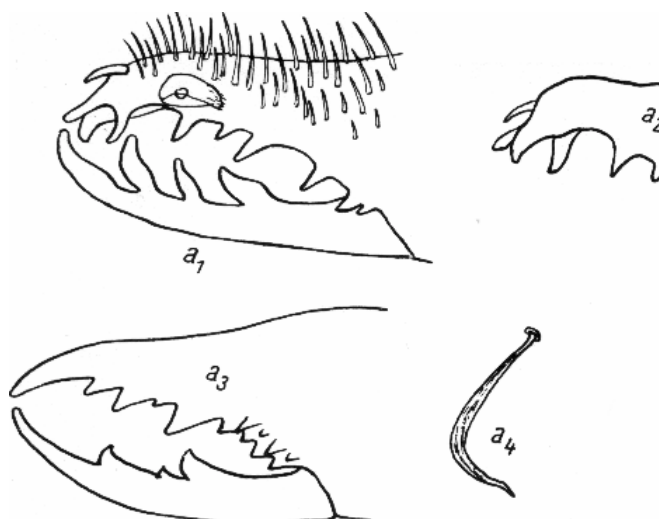
Local Distribution: Egypt: Cairo.

Ref: 1. *G.k.* Roewer, 1934 pp.355-356 fig.258 a1-a4, 259 a1-a2 Dmf
Lower Egypt (Cairo)

Diagnosis: Male: Chelicerae: immovable finger's tip with a dorsal spine; the intermediate tooth of the movable finger very big; dentition and flagellum (Fig. 13 a1,a2); Pedipalp with spines and spinous-bristles (Fig. 14 a1), metatarsus with numerous cylindrical-bristles; Opisthosoma: stigmal sternite with 6:6 ctenidia in the form of (Fig. 13 a4); Colouration: dirty rusty yellow, malleoli one-coloured; Body length 15 mm.

Fig. 13

Gnosippus klunzingeri
a1 = male, right chelicera with flagellum, prolaterally.
a2 = male left chelicera, tip of immovable finger, laterally.
a3 = female, right chelicera, prolaterally. a4 = male ctenidium. (After Roewer, 1934. fig.258 a1-4 p.354)



Female: Chelicerae: immovable finger with 4 prolateral cheek-teeth (Fig. 13 a3); Pedipalp: metatarsus and tarsus prolaterally with spines (Fig. 14 a2), metatarsus ventrally with long cylindrical-bristles; Opisthosomal sternites without ctenidia; Colouration: as in male; Body length 15-18 mm.

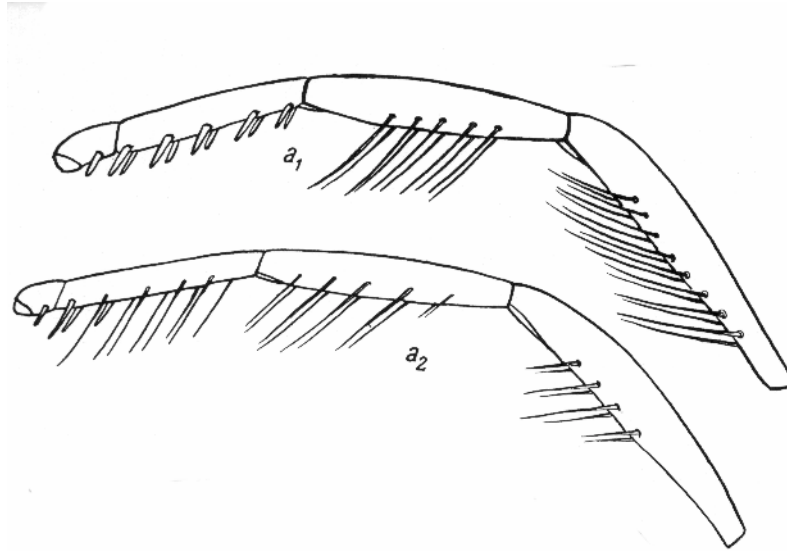


Fig. 14 *Gnosippus klunzingeri*

a1 = male, right pedipalp, prolaterally.

a2 = female, right pedipalp, prolaterally. (After Roewer, 1934. fig.259 a1-2 p.356)

In the author's collection:

Biton sp.: Bir Abraq, near El-Shalateen November 1984; Wadi Sarmatai, near Gebel Elba March 1996; El-Shalateen & Wadi Ramad May 1997; Wadi Feiran April 1998 (Southern Sinai)

Blossia sp.: Bir El-Gahliya, near El-Shalateen October 1995

Daesiidae : Ras Mohammed protectorate April 1994; Nabq protectorate May 1995; Abu Galoum protectorate July, November 1995, May 1995; St.Catherine May 1997, June 1998; Wadi Digla, near Cairo April 1998

Family Galeodidae

Diagnosis of the family :

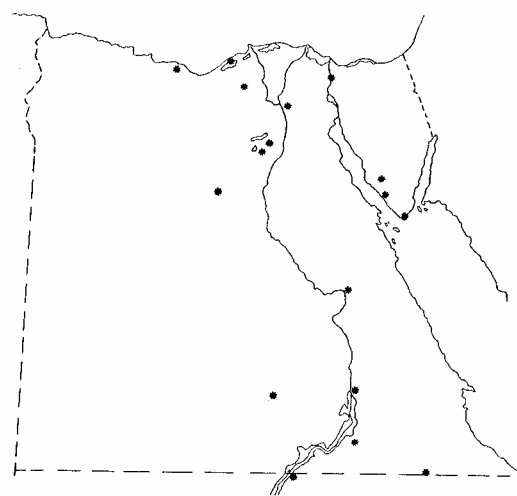
Small to large (12-70 mm), long-legged solpugids with a terminal anus. The exterior lobes of the propeltidium are fused posteriorly. The tarsus of leg 1 has no claws or one or two claws. The tarsal segmentation of legs 1 to 4 is 1-2-2-3, and the tarsal claws of legs 2 to 4 are setaceous. The male cheliceral flagellum is a single, capitate (terminally enlarged), paraxially movable seta located on the mesial surface. The female operculae are not differentiated from other abdominal sternites and are not specifically variable.

Adult and immature galeodids are omnivorous and feed on vertebrates and arthropods, including termites. The mating behaviour of 4 species in 2 genera (*Galeodes* and *Othoes*) involves the submission of the female upon pedipalpal touch or stroking by the male, kneading of the abdomen of the female with the chelicerae of the male, emission of spermatophores by the male, and the opening of the opercula of the female and the introduction of spermatophores into the female with the chelicerae of the male. Galeodids are nocturnal. They construct extensive, shallow burrows utilizing the chelicerae, pedipalpi, and metatarsal and tibial rakes of legs 2 and 3. Both *Galeodes* and *Othoes* have an annular life cycle; that of *Othoes* involves 12 stadia. *Othoes* and certain species of *Galeodes* inhabit sandy soils and sand dunes. Otherwise, their ecology is unknown.

This family is distributed throughout Asia and northern Africa. Although C.F. Roewer recognized 10 genera and 125 species, the most recent reviser of the family, F.A. Turk (1960), recognized only 4 genera, which contain 180 species : *Othoes* (26 species), *Galeodopsis* (3 species), *Paragaleodes* (6 species), and *Galeodes*, with 3 subgenera: (*Galeodellus*, 52 species; *Galeodenna*, 2 species; and *Galeodes*, 91 species).

Thirteen species of 2 genera are recorded from Egypt.

Distribution map II.



Distribution Map of Galeodidae in Egypt

Map II.

Key to Genera :

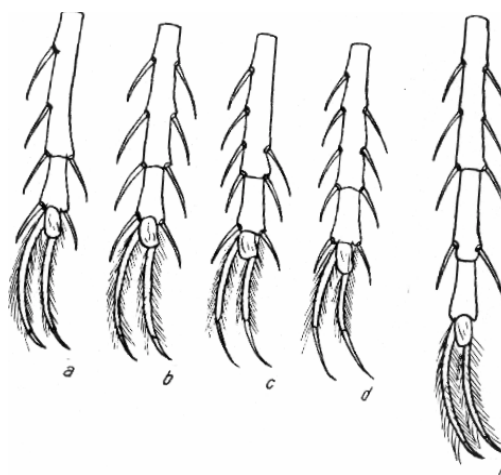
1. Tarsi of legs 2 and 3, segments 1 & 2 with 1.1.2/2 or 2.2.2/2 ventral spines (Fig. 15 a,b); Claws: unguiculus never more than one third the length of the pedunculus of the claw and usually only a quarter or less

Galeodes

- . Tarsi of legs 2 and 3, segments 1 & 2 with 1.1.2.2/2 or 1.2.2.2/2 ventral spines (Fig. 15 c,d); Claws: unguiculus more or less half the length of the pedunculus of the claw (Fig. 20 a)

Othoes

Fig. 15 Ventral spination of tarsus of : a, b, e = *Galeodes* s.str. c, d, e = *Othoes* (c, d = tarsus 2 or 3; e = tarsus 4). (After Roewer, 1934. fig.313 d-g,k p.504)



Genus *Galeodes* Pallas, 1772

(Plate 1)

Genotype : *Galeodes araneoides* (Pallas, 1772)

Diagnosis: Galeodidae, tarsus 2 and 3 ventrally with 1.1.2/2 or 2.2.2 /2 spines and tarsus 4 ventrally with 2.2.2/2/0 spines (Fig. 15 a,b,e). Unguiculus of claws of tarsus 2-4 reach only nearly 1/4 the length of the pedunculus.

76 species Central and near Asia, in Africa southwards until Sudan; from this 34 males and females, 22 only males and 20 only females are known.

Key to males :

1. Movable finger with 1 intermediate tooth; immovable finger the same.. 2
- . Movable finger with 2 or 3 intermediate teeth 3

2. Metatarsus of pedipalp ventrally without cylindrical-bristles; Plantar-bristles of tarsus 4 needle-like (type 1); All sternites of opisthosoma without ctenidia; Colouration uniformly brown, opisthosoma dorsally without distinct, dark median stripe; Body length 44 mm *G. granti*
- . Metatarsus of pedipalp ventrally with cylindrical-bristles; Plantar-bristles of tarsus 4 spindle-shaped or needle-like (type 2 or 1); Sternites of the opisthosoma provided with ctenidia; Sternites 6 and 7 of the opisthosoma with a slanting row of needle-like ctenidia (type 1); Colouration sandy yellow, opisthosoma dorsally only with traces of a dark median stripe; Body length 45 mm *G. rhamses*
3. Movable finger with 2 intermediate teeth. Immovable finger with 1 intermediate tooth 4
- . Movable finger with 3 intermediate teeth. Immovable finger with 1 or 2 intermediate teeth 9
4. Metatarsus of pedipalp ventrally without cylindrical-bristles; Only sternite 6 of opisthosoma provided with ctenidia; Malleoli whitish yellow; Opisthosoma dorsally with completely blackish median stripe; Plantar-bristles of tarsus 4 obtusely clavate (type 4); Body length till 34 mm *G. barbarus*
- . Metatarsus of pedipalp ventrally with cylindrical-bristles 5
5. Opisthosoma ventrally without ctenidia; Plantar-bristles of tarsus 4 spindle-shaped (type 2); Colouration rusty yellow, chelicerae and propeltidium sometimes brown; Opisthosoma dorsally with blackish median stripe; Body length 31-34 mm *G. araneoides*
- . At least sternite 6 of the opisthosoma provided with ctenidia 6
- 6 . Sternites 5-7 of the opisthosoma provided with needle-like ctenidia (type 1); Plantar-bristles of tarsus 4 needle-like (type 1); Colouration yellow-brown, opisthosoma dorsally with or without black median stripe; Body length 35-51 mm *G. arabs*
- . Only sternite 6 of the opisthosoma provided with ctenidia 7
7. Sternite 6 of the opisthosoma with spindle-shaped ctenidia (type 2); Plantar-bristles of tarsus 4 obtusely clavate (type 4); Colouration rusty yellow, opisthosoma dorsally with blackish median stripe; Pedipalps and legs with long-silky hairs; Body length 32 mm *G. sericeus*
- . Sternite 6 of the opisthosoma with needle-like ctenidia (type 1) 8
8. Tarsus 4 ventrally without especially differentiated plantar-bristles; Colouration clay-yellow, opisthosoma dorsally with a scarce pilosity, dark median stripe; Body and limbs without long-silky hairs; Body length 24 mm *G. kraepelini*
- . Tarsus 4 ventrally with dense covering, spindle-shaped (type 2); Sternite 6 of the opisthosoma with a few type 1 ctenidia; Metatarsus of pedipalps ventrally with 8-10 pairs of spines with numerous

- cylindrical- bristles; Body length 52 mm *G. medusae*
9. Immovable finger with 1 intermediate tooth; Metatarsus of pedipalps ventrally with 6 pairs of very short stout spines, with cylindrical-bristles; Body length 22 mm *G. theodori*
- . Immovable finger with 2 intermediate teeth 10
10. Metatarsus of pedipalps without cylindrical-bristles; Tarsus 4 ventrally without especially differentiated plantar-bristles; Sternite 6 of the opisthosoma with a slanting row, sternites 5 and 7 with dispersed, needle-like ctenidia (type 1); Colouration rusty yellow, opisthosoma dorsally with distinct blackish median stripe; Body length 35 mm *G. scalaris*
- . Metatarsus of pedipalps with cylindrical-bristles; Tarsus 4 ventrally with differentiated plantar-bristles 11
11. Only sternite 6 of the opisthosoma with a slanting row of needle-like ctenidia (type 1); Plantar-bristles of tarsus 4 spindle-shaped (type 2); Opisthosoma dorsally with blackish median stripe; Body length 34-43 mm *G. graecus*
- . Sternite 6 of the opisthosoma with a slanting row of spindle-shaped ctenidia (type 2); Plantar-bristles of tarsus 4 needle-like (type 1); Metatarsus of pedipalps ventrally with 2.2.2.2.2 spines and cylindrical-bristles border; Colouration golden yellow, opisthosoma with distinct, entire dark black-stripe; Body length 30 mm ... *G. veemi*

Key to females :

1. Movable finger with 1 intermediate tooth, immovable finger alike; Opisthosoma ventrally without ctenidia 2
- . Movable finger with 2 or 3 intermediate teeth; Opisthosoma ventrally with or without ctenidia 3
2. Chelicerae rusty yellow with 2 dark longitudinal stripes; Opisthosoma dorsally without dark median stripe; Body length 53 mm; Arabia, Palestine, Lower Egypt *G. granti*
- . Chelicerae uniformly rusty yellow; Opisthosoma dorsally with blackish median stripe: Body length 50 mm *G. rhamses*
3. Movable finger with 2 intermediate teeth, immovable finger with 1 intermediate tooth 4
- . Movable finger with 3 intermediate teeth, immovable finger with 2 intermediate teeth 7
4. Sternite 6 of the opisthosoma with a slanting row of needle-like ctenidia (type 1); Opisthosoma dorsally with or without dark median stripe; Body length till 51 mm *G. arabs*
- . Opisthosoma ventrally without ctenidia; Opisthosoma dorsally with distinct, seldom unsharp, dark median stripe 5

5. Pedipalps, legs, chelicerae and propeltidium provided with long silky hairs; Body length 34 mm *G. sericeus*
- . Pedipalps, legs and body without long, dense silky hairs 6
6. Body (Opisthosoma) ventrally rusty to pale yellow; Malleoli uniformly white-yellow; Body length till 31 mm *G. araneoides*
- . Opisthosomal pleura with dirty grey hairs; Metatarsus 2 and 3 ventrally provided with 1.2 spinous-bristles and metatarsus 4 ventrally provided with 1.22 spinous-bristles; Body length 34 mm *G. barbarus*
7. Opisthosoma upon sternite 6 with a slanting row of needle-like ctenidia (type 1); Opisthosoma dorsally with dark median stripe; Metatarsus of pedipalps ventrally provided with true spines; Metatarsus 2 and 3 ventrally with 1.2 spinous-bristles; Body length till 43 mm *G. graecus*
- . Opisthosoma ventrally without ctenidia 8
8. Opisthosoma dorsally with entire, till the anal segment, blackish median stripe; All sternites of the opisthosoma yellowish; Body and limbs with yellow hairs; Metatarsus 4 ventrally with 1.2.2 spinous-bristles; Body length 35 mm *G. scalaris*
- . Colouration golden yellow, opisthosoma with distinct entire dark black stripe; Metatarsus of pedipalps ventrally with 2.2.2.2.2 spines (without cylindrical-bristles); Body length 28-32 mm *G. veemi*

Galeodes arabs C.L.Koch, 1842 (Fig. 1)

C.L.Koch, 1842 p.353; Kraepelin, 1899 p.202 and 1901 p.21 (incl.var. *G. a. syriacus*, only female); Birula, 1905 p.253 - male and female.

Synonyms: *G.a.syriacus* Kraepelin,1899 [Roewer,1934 p.532]

World Distribution: Algeria, Arabia, Egypt, Ethiopia, Iraq, Kenya, Libya, Morocco, Palestine, Sudan, Syria, Tunisia, Yemen.

Local Distribution: Egypt: Alamein, Assuan, Cairo, Cantara (Suez canal), Tor (S.Sinai).

Ref: 1. *G.a.* Tullgren,1909 p.1 N Tor (S.Sinai) (in June)

2. *G.a.* Roewer,1934 pp.518-519,522-523,532 *Dmf* Egypt: Alamein, Assuan, Cairo

3. *G.a.* Roewer,1941 p.161 *Nmf* Cairo, Cantara (Suez canal)

4. *G.a.* Levy & Shulov,1964 p.109 N Palestine

Galeodes araneoides (Pallas, 1772) {T} (Figs. 16, 17)

Pallas, 1772 p.37 (sub *Phalangium*); Kraepelin, 1901 p.18 (incl. synonyms); Pocock, 1899 p.402 (= *G. truculentus*); Birula, 1892-93 p.82 and 1905 p.251 (part.) and p.252 - male and female.

Synonyms: *Phalangium a.* Pallas, 1772 [Roewer, 1934 p.526]

Solpuga a. Audouin, 1825

Solpuga intrepida Audouin, 1825 (New synonymy)

G. truculentus Pocock, 1899

World Distribution: Afghanistan, Egypt, Iran, Iraq, Jordan, Palestine, South east Russia & ex USSR, Turkey.

Local Distribution: Egypt: Upper Egypt, Wady Ferran (S.Sinai).

- Ref: 1. *Solpuga a.* Audouin, 1825 pp.176-178 pl.8 fig.7 Dmf
 2. *Solpuga intrepida* Audouin, 1825 p.178 pl.8 fig.8 Dmf
 3. *Solpuga a.* Cambridge, 1870 p.818 N Wady Ferran (Sinai),
 Upper Egypt [under stones, among debris of old ruins]
 4. *G.a.* Roewer, 1934 pp.516, 523-524, 526-527 Dmf
 5. *G.a.* Roewer, 1941 p.159 Nmf Palestine
 6. *G.a.* Levy & Shulov, 1964 p.109 N Palestine

Habitat : It was found under stones and among debris of old ruins.

Fig. 16 *Galeodes araneoides*, female : 7.1 = dorsal view 7.c = chelicera prolaterally. (After Audouin, 1825. pl.8 fig.7) (right)

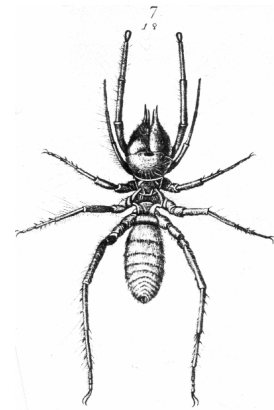
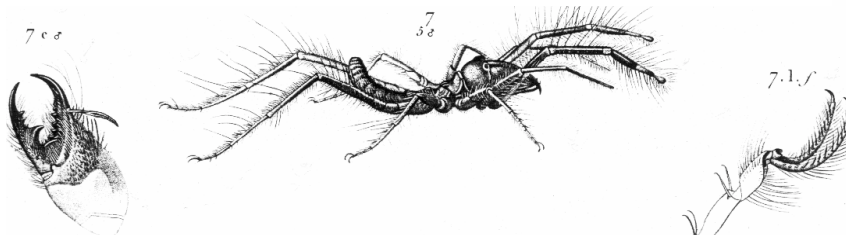


Fig. 17 *Galeodes araneoides*, male : 7.5 = lateral view 7.c = chelicera prolaterally 7.l.f = claws of tarsus IV. (After Audouin, 1825. pl.8 fig.7) (below)



Galeodes barbarus Lucas, 1846

Lucas, 1846 p.279; Kraepelin, 1901 p.24 (sub *Paragaleodes*) - male and female.

Synonyms: *Paragaleodes b.* Kraepelin, 1901 [Roewer, 1934 p.526]

World Distribution: Algeria, Egypt, Ethiopia, Libya, Morocco, Somalia, Sudan, Tunisia.

Local Distribution: Egypt: Alexandria, Cairo, El-Fayum.

- Ref: 1. *Paragaleodes b.* Tullgren, 1909 p.2 N Tourah, near Cairo
[under stones] (in May)
2. *G.b.* Roewer, 1934 pp.516,523,534 *Dmf* Cairo, Alexandria, Fayum
3. *G.b.* Roewer, 1941 p.162 *Nm* Somalia
4. *G.b.* Benoit, 1964 pp.95-96 N Alexandria, Cairo, El-Fayum

Habitat : It was found under stones.

Galeodes graecus C.L.Koch, 1842

C.L.Koch, 1842 p.353; Kraepelin, 1901 p.20; Werner, 1922 p.144 (sub *G. tölgi*) - male and female.

Synonyms: *G.tölgi* Werner, 1932 [Roewer, 1934 p.531]

World Distribution: Armenia, Balkan countries, Cyprus, Egypt, Greece, Macedonia, North Syria, Turkey.

Local Distribution: Egypt: Wadi Natron.

- Ref: 1. *G.g.* Simon, 1899 p.244 N Bir-Hooker (Wadi Natron)
2. *G.g.* Roewer, 1934 pp.521,525,531 *Dmf*
3. *G.g.* Roewer, 1941 p.160 *Nmf* Greece, Turkey

Galeodes granti Pocock, 1903

Pocock, 1903 p.215 - male and female.

World Distribution: Egypt, Palestine, Saudi Arabia, Somalia, Sudan, Syria, Yemen.

Local Distribution: Egypt: El-Fayum.

- Ref: 1. *G.g.* Roewer, 1934 pp.515,522,532 *Dmf* Lower Egypt (Fayum)
 2. *G.g.* Roewer, 1941 p.162 *Nf* Somalia, Syria
 3. *G.g.* Benoit, 1964 p.93 *Dmf* El-Fayum
 4. *G.g.* Levy & Shulov, 1964 p.109 *N* Palestine

Galeodes kraepelini Roewer, 1934

Roewer, 1934 new name for *G. sericeus* male (not female) Kraepelin, 1899 p.205 and 1901 p.27 (sub *Paragaleodes sericeus* male) - only male.

Synonyms: *Paragaleodes sericeus* (*m*) Kraepelin, 1899

[Roewer, 1934 p.533]

World Distribution: Egypt.

Endemic Species

Local Distribution: Egypt: Upper Egypt.

- Ref: 1. *G.k.* Roewer, 1934 pp.517,533 *Dm* Upper Egypt (locality ?)

Galeodes medusae Turk, 1960 (Fig. 18)

World Distribution: Egypt.

Endemic Species

Local Distribution: Egypt: Qena.

- Ref: 1. *G.m.* Turk, 1960 pp.114-115 fig.4 *Dm* Qena (In May)

Fig. 18 *Galeodes medusae*, male, Stridulatory seta.
 (After Turk, 1960. fig.4 p.115)



Galeodes rhamses Roewer, 1934

World Distribution: Egypt.

Endemic Species

Local Distribution: Egypt: Upper Egypt, south of Assuan.

- Ref: 1. *G.r.* Roewer, 1934 pp.515,522,534 *Dmf* Upper Egypt
 (between Assuan and Korosko)

Galeodes scalaris C.L.Koch, 1842

C.L.Koch, 1842 p.353 (female) and p.354 (male ? *leucophaeus*); Kraepelin, 1899 p.204 and 1901 p. 25 (sub *Paragaleodes*) - male and female - Arabia, Egypt (Coast of Red Sea); Borelli, 1924 Libya and Morocco.

Synonyms: *G.leucophaeus* ? C.L.Koch,1842 [Roewer,1934 p.533]
Paragaleodes s. Kraepelin,1899

World Distribution: Arabia, Egypt, Libya, Morocco.

Local Distribution: Egypt: Cairo and coast of the Red Sea.

- Ref: 1. *G.s.* Roewer,1934 pp.519-520,526,533 Dmf Egypt (coast of the Red Sea)
 2. *G.s.* Roewer,1941 p.162 Nm Egypt (Cairo)

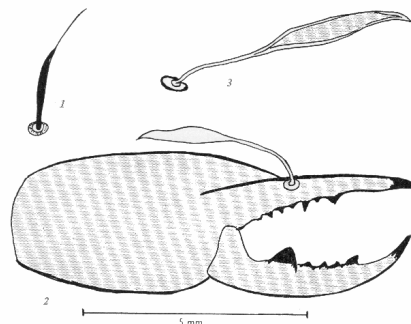
Galeodes sericeus (Kraepelin, 1899)

Kraepelin, 1899 p.205 and 1901 p.27 (sub *Paragaleodes* female, not male ?) - male and female.

Synonyms: *Paragaleodes* s. (f) Kraepelin,1899 [Roewer,1934 p.533]
 World Distribution: Egypt. Endemic Species
 Local Distribution: Egypt: Upper Egypt.

- Ref: 1. *G.s.* Roewer,1934 pp.517,523,533 fig.317 Dmf Upper Egypt (u. a. Schendi)

Fig. 19 *Galeodes theodori*, male :
 1 = Stridulatory seta 2 = Left chelicera, prolaterally 3 = Flagellum.
 (After Turk, 1960. figs.2,3,3a p.114)



Galeodes theodori Turk, 1960 (Fig. 19)

World Distribution: Egypt. Endemic Species
Local Distribution: Egypt: Qena.

Ref: 1. *G.t.* Turk, 1960 pp.113-114 fig.2,3,3a *Dm* Qena (In May)

Galeodes veemi Whittick, 1939

World Distribution: Egypt. Endemic Species
Local Distribution: Egypt: El-Fayum.

Ref: 1. *G.v.* Roewer, 1941 pp.166-167 *Dmf* Egypt (Fayum)

Genus *Othoes* Hirst, 1911

Genotype: *Othoes floweri* Hirst, 1911

Diagnosis: Galeodidae, with tarsus 2 and 3 ventrally with 1.1.2.2 or 1.2.2.2 spines and tarsus 4 ventrally with 2.2.2/2/0 spines (Fig. 15 c,d,e). Unguiculus of the claws of tarsus 2-4 conspicuously long and scarcely shorter than half the length of the pedunculus (Fig. 20 a). Sometimes, the second of the usual 3 front-teeth of the immovable finger is wanting, and tarsus 2 and 3 the last piece only with one spine. Two species, known only as female, one from north-west Africa, while the other is of doubtful origin.

Othoes floweri Hirst, 1911 {T} (Fig. 20 b)

Hirst, 1911 p.120

World Distribution: Egypt. Endemic Species
Local Distribution: Egypt: Upper Egypt (Wadi Halfa).

Ref: 1. *O.f.* Roewer, 1934 p.536 fig.318 a,d *Df* Upper Egypt
(Wadi Halfa)

Diagnosis: Chelicerae: immovable finger with 2 intermediate teeth (there is a gap between teeth no.1 and 3, then no.2 wanting) and movable finger with 2 intermediate teeth (Fig. 20 b); Pedipalps on tibia and metatarsus

without spines and without cylindrical-bristles; Opisthosoma ventrally without ctenidia; Colouration pale yellow, opisthosoma dorsally without dark median stripe, pedipalps on tibia and metatarsus black, chelicerae and legs pale yellow; Body length 22.5 mm; Only female.

Fig. 20 a = *Othoes*, Claws of tarsus 2 (unguiculus very long and pointed, pilosity of pedunculus very fine and long).

b = *Othoes floweri*, female, left chelicera, prolaterally. (After Roewer, 1934. fig.318 a,d p.535)



In the author's collection:

Galeodes sp. Sharm El-Sheikh June 1985; Wadi El-Raiyan, near El-Fayum June 1990 (El-Hennawy, 1991 p.88); Ras Mohammed protectorate July 1994, May 1995, (Southern Sinai); Bahariya Oasis May, October 1995; Bir Frokit, on the borders with Sudan August 1997; Toshka, south of western desert September 1997



Plate 1. *Galeodes* sp.



Plate 2. *Rhagodes* sp.

Family Karschiidae

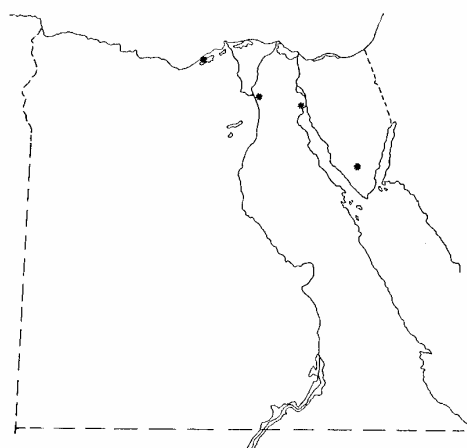
Diagnosis of the family :

Small to moderate-sized (8-20 mm), long-legged solpugids with a terminal anus. The chelicerae are multidentate. The lateral lobes of the propeltidium are posteriorly fused. The tarsi of legs 1 to 4 have one segment and two smooth tarsal claws. The male cheliceral flagellum is a fanlike to coiled, whiplike, paraxially immovable seta located on the mesial surface, with associated modified setae and a dorsal cheliceral horn. The female genital opercula are differentiated from other abdominal sternites and are specifically variable.

The biology and ecology of these solpugids are unknown. The family is distributed throughout Asia and the Near East to southeastern Europe and northwestern Africa. Five genera and 41 species are known : *Karschia* (21 species), *Barrus* (1 species), *Barrella* (4 species), *Eusimonia* (13 species), and *Rhinippus* (2 species).

Three species of 3 genera are recorded from Egypt.

Distribution map III.



Distribution Map of Karschiidae in Egypt

Map III.

Key to Genera :

1. Male flagellum with a strongly differentiated bristles tuft. Female cheliceral movable finger with 2 or more small intermediate-teeth between front and main teeth. *Karschia*
- . Male flagellum more or less oval elongated in shape, without bristles..2
2. Male flagellum, prolaterally, without a horn;
Ocular area with dense tubular hairs (Fig. 21 A). *Barrus*
- . Male flagellum, prolaterally, with a curved, more or less, blunt horn;
Ocular area and also the front edge of male's propeltidium only with normal bristles and hairs. *Eusimonia*

Genus *Barrus* Simon, 1880

Simon, 1880 p.401; Kraepelin, 1901 p.140

Genotype: *Barrus letourneuxi* Simon, 1880 p.401 (only male).

1 species. Lower Egypt.

Barrus letourneuxi Simon, 1880 {T} (Fig. 21)

World Distribution: Egypt.

Endemic Species

Local Distribution: Egypt: Alexandria (Mex).

Ref: 1. *B.l.* Simon, 1880 pp.401-402 Dm Mex, near Alexandria
[In December]

2. *B.l.* Roewer, 1934 pp.305-306 fig.227 A-D Dm Lower Egypt:
Alexandria (Le Mex)

Diagnosis: Dorsal side of chelicera with 2 long, thin bristles (Fig. 21 A). Pedipalp ventrally: femur prolaterally with a group of 4 spines, tibia without spines, metatarsus with 4 spines and tarsus with 1 spine (Fig. 21 B). Opisthosoma: sternite 4 laterally at both stigma, oblique line of 3 ctenidia (Fig. 21 C), sternite 5 laterally at both stigma, oblique line of 12 ctenidia (Fig. 21 D). Body length 9.5 mm.

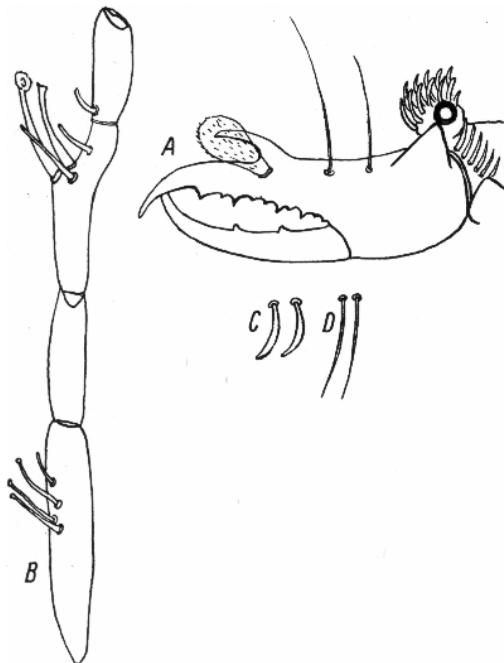


Fig. 21 *Barrus letourneuxi*, male.

A = left chelicera and ocular tubercle with front margin of propeltidium, prolaterally. B = left pedipalp ventrally. C = 2 ctenidia of opisthosomal sternite 4. D = 2 ctenidia of opisthosomal sternite 5. (After Roewer, 1934. fig.227 A-D p.306)

Genus *Eusimonia* Kraepelin, 1899

Kraepelin, 1899 p.249

Genotype: *Eusimonia furcillata* (Simon, 1872)

7 species (no female). North Africa till Syria, Arabia, Iran, Turkey.

Eusimonia kabiliana (Simon, 1879) (Fig. 22)

Synonyms: *Gluvia k.* Simon, 1879

[Roewer, 1934 p.302]

World Distribution: Algeria, Egypt.

Local Distribution: Egypt: Cairo, Suez ?.

Ref: 1. *E.k.* Roewer, 1934 pp.301-302 fig.224 D Dmf Lower Egypt:
Cairo, Suez ?

Diagnosis: Male flagellum slender, skinny, sloping; Pedipalp: metatarsus only with ventral spines, and tarsus not hairy; Opisthosoma: sternite 4 with 6-8 short roll-shaped ctenidia on both stigma; sternite 5 with one cross row of 10 short, apical spade-shaped ctenidia; Body length 8 mm.

Fig. 22 *Eusimonia kabiliana*, prolateral view of male right chelicera, flagellum complex (after Kraepelin). (After Roewer, 1934. fig.224 D p.300)



Genus *Karschia* Walter, 1889

Genotype: *Karschia cornifera* Walter, 1889

16 species. Near and central Asia.

Karschia sp.

Local Distribution: Egypt: St.Catherine, Southern Sinai.

In the author's collection:

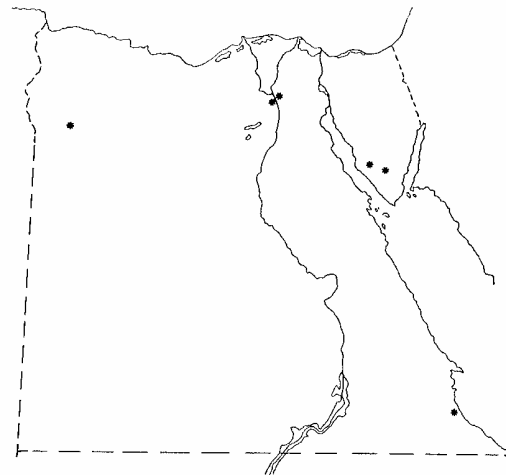
Karschia sp.: St.Catherine, Southern Sinai November 1997

Family Rhagodidae

Diagnosis of the family :

Small to large (10-60 mm), heavy-bodied, short-legged solpugids with a ventrally located anus. The exterior lobes of the propeltidium are free. The tarsi of leg 1 have a pretarsus and two claws. The metatarsi of leg 1 have dense ventral colthing of short spinelike setae. The tarsi of legs 2 to 4 have one segment and two smooth claws. The male cheliceral flagellum is composed of two flattened, curled, paraxially immovable setae that form a nearly complete, slightly curved, truncate, hornlike tube on the mesial surface. The female genital opercula are not differentiated from other abdominal sternites and are not specifically variable.

The biology and ecology of these solpugids are unknown. The family is distributed throughout north-eastern Africa, the near East, and south-western Asia. Although C.F. Roewer recognized 84 species in 26 genera, recent workers have demonstrated that instability exists in his sub-familial, generic, and specific diagnostic characters. More dependable characters are needed. According to Roewer, the largest genera are *Rhagodes* and *Rhagodoca*. Ninety one species are known.



Distribution Map of Rhagodidae in Egypt

Four species of 2 genera are recorded from Egypt.
Distribution map IV.

Map IV.

Key to Genera :

1. Tarsi of legs 2-4 : without spines ***Rhagodes***
- . Tarsi of legs 2-3 : with 1.1 spines; Tarsi of leg 4 : with 1.2.2 spines ***Rhagoditta***

Genus *Rhagodes* Pocock, 1897

(Plate 2)

Genotype: *Rhagodes melanus* (Olivier, 1807)

Diagnosis: Tarsi of legs 2-4 without spines.

11 species. North Africa, Tanzania, Near Asia (Palestine till Pakistan).

Key to species :

1. Coxa 1-3 without bacilli; Body, legs, pedipalps and malleoli blackish;
Body length 20-25 mm *R. melanus*
- . Coxa 1-3 with many bacilli 2
2. Malleoli black; body, chelicerae black; opisthosomal tergites 8 & 9
only white; pedipalps and leg 1 rusty yellow with dark brown tarsus
and metatarsus; legs 2-4 rusty yellow with all coxae brownish; Body
length 14 mm *R. aegypticus*
- . Malleoli white; body, chelicerae dark brown, hairy; all coxae and legs
pale brown with darker hairs; pedipalpal tarsus and metatarsus black;
Body length till 30 mm *R. furiosus*

Rhagodes aegypticus Roewer, 1934

World Distribution: Egypt.

Endemic Species

Local Distribution: Egypt: Cairo.

Ref: 1. *R.a.* Roewer, 1934 pp.269-270 Df Egypt (Cairo) (only female)

Rhagodes furiosus (C.L.Koch, 1842)

C.L.Koch, 1842 p.354 (sub *Rhax*); Kraepelin, 1901 p.34 - male and female.

Synonyms: *Rhax f.* C.L.Koch, 1842

[Roewer, 1934 p.270]

World Distribution: Egypt, Libya.

Local Distribution: Egypt: Cairo, Gizah.

Ref: 1. *R.f.* Roewer, 1934 pp.269-270 N Egypt, Cyrenaica, Audjila

2. *R.f.* Roewer, 1941 p.101 Nm Egypt (Gizeh)

3. *R.f.* Lawrence, 1953 p.955 Nmf Abassia, Cairo

Rhagodes melanus (Olivier, 1807) {T} (Fig. 23)

Olivier, 1807 p.308 (sub *Galeodes*); Kraepelin, 1901 p.34 - male and female.

Synonyms: *Galeodes m.* Olivier, 1807 [Roewer, 1934 p.269]

Solpuga m. Audouin, 1825

World Distribution: Algeria, Egypt, South Palestine.

Local Distribution: Egypt: Siwa, Wady Ferran (Southern Sinai).

- Ref: 1. *Solpuga m.* Audouin, 1825 pp.178-179 pl.8 fig.9 Dmf
 2. *Solpuga m.* Cambridge, 1870 p.818 N Wady Ferran (Sinai)
 3. *R.m.* Roewer, 1934 pp.269-270 Dmf North east Africa: Egypt;
 Algeria; South Palestine
 4. *R.m.* Lawrence, 1953 p.955 Nmf Siwa
 5. *R.m.* Levy & Shulov, 1964 p.103 N South Palestine

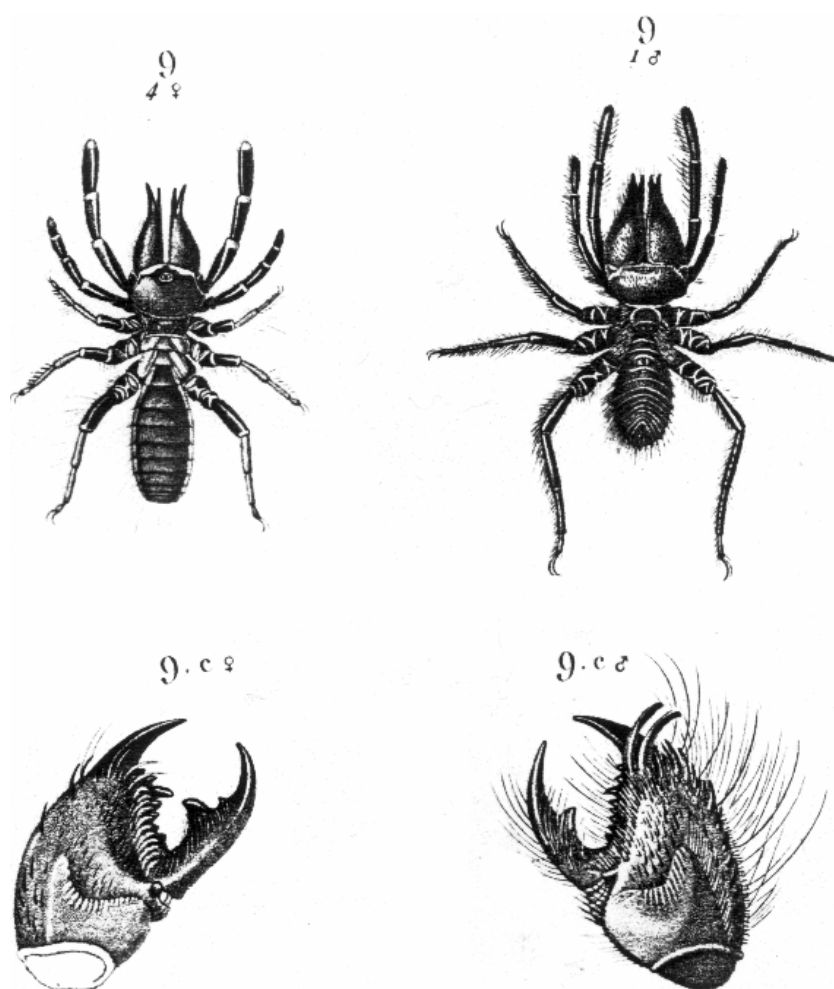


Fig. 23 *Rhagodes melanus* :

male : 9.1 = dorsal view 9.c = chelicera prolaterally

female : 9.4 = dorsal view 9.c = chelicera prolaterally.

(After Audouin, 1825. pl.8 fig.9)

Genus *Rhagoditta* Roewer, 1934

Genotype: *Rhagoditta phalangium* (Olivier, 1807)

Diagnosis: Tarsi of legs 2 and 3 with 1.1 spines; tarsus of leg 4 with 1.2.2 spines.

5 species. North and east Africa, Iran.

Rhagoditta phalangium (Olivier, 1807) {T} (Fig. 24)

Olivier, 1807 p.308 (sub *Galeodes*); Kraepelin, 1901 p.35 (sub *Rhagodes*) and Birula, 1926 p.184 (sub *Rhagodes*) - male and female.

Synonyms: *Galeodes p.* Olivier, 1807 [Roewer, 1934 p.278]

Rhagodes p. Kraepelin, 1901

World Distribution: Egypt, Ethiopia, Somalia.

Local Distribution: Egypt: Upper Egypt.

Ref: 1. *Solpuga p.* Audouin, 1825 p.179 pl.8 fig.10 Dm

2. *R.p.* Roewer, 1934 pp.278-279 Dmf Upper Egypt, Abessinya, Obock

Diagnosis: Tibiae of legs 2 and 3 dorsally with 2 apical spines; coxae 1-3 with a slanting row of 4-6 strong bacilli; metatarsi 2-4 ventrally with 1.1.1.2, 1.1.2.2, 1.1.2.3 spinous-bristles; Malleoli yellowish white; propeltidium black, with frontal margin pale yellow; opisthosoma dorsally with quite black broad longitudinal band, pleura grey with red hairs; chelicerae with red fingers; all coxae and sternites rusty yellow; all legs and pedipalps rusty yellow with tarsus and metatarsus apically red; Body length 22-24 mm.

10 c



1 ♂

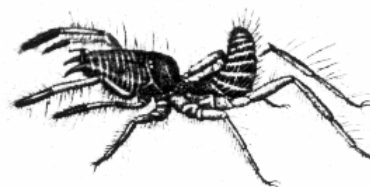


Fig. 24 *Rhagoditta phalangium*, male : 10.1 = lateral view
10.c = chelicera prolaterally.
(After Audouin, 1825. pl.8 fig.10)

In the author's collection:

Rhagodes sp.: St.Katherine December 1987; El-Shalateen March 1996

Family Solpugidae

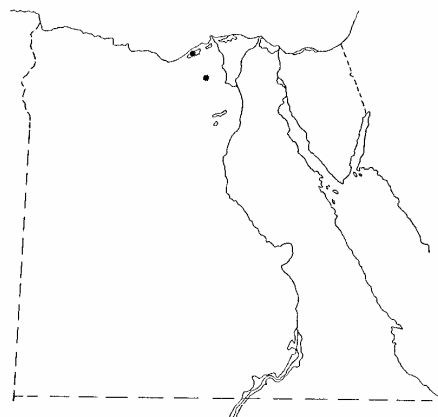
Diagnosis of the family :

Small to large (8-60 mm), long-legged solpugids with a terminal anus. The exterior lobes of the propeltidium are posteriorly fused. The tarsi of leg 1 lack claws. The tarsal claws of legs 2 to 4 are smooth. The tarsal segmentation of legs 1 to 4 varies from 1-4-4-6 to 1-4-4-7. The male cheliceral flagellum is a paraxially immovable, mesodorsal to dorsal, whiplike structure separated from the fixed cheliceral finger by a suture. The female opercula are indistinctly differentiated from other abdominal sternites, and although they are sometimes variable from one genus to another, they are not specifically so.

Adults are omnivorous, but *Solpuga sericea* is known to be termitophagous. The food habits of immature individuals are not known. The mating behaviour is unknown. Both diurnal and nocturnal species are known; the former are capable of climbing shrubs and trees, and the latter often construct long shallow burrows, utilizing the chelicerae, or they hide in natural crevices or cavities. These solpugids are believed to live for several years. Their ecology is unknown.

The family is predominantly African. Twenty three genera and over 200 species have been described. The largest genera are *Zeriassa*, *Solpuga*, and *Solpugema*. Since recent workers have demonstrated that instability exists in the generic and specific diagnostic characters of C.F. Roewer, the family cannot be delineated.

Two species of 1 genus are recorded from Egypt. Distribution map V.



Distribution Map of Solpugidae in Egypt

Map V.

Genus *Oparbella* Roewer, 1934

Genotype: *Oparbella flavescens* (C.L.Koch, 1842)

Diagnosis: Solpuginae, with ocular tubercle with an irregular bush of partly blunt bristles. Deutosternum staff-shaped. Prosoma and pedipalps without spines. Male pedipalp's metatarsus with scopula and cylindrical-bristles. Legs: leg 4 without mane; metatarsus 2-3 dorsally with a long

row of 5 spines (Fig 25 A,d1-d5); tarsus 2, segment 1 of both male and female, dorsolaterally with a long row of 7 spinous-bristles (Fig 25 A,b1-7); tarsus 2-3, segments 2-4 with 2/1/2 spines ventrally (Fig 25 A,v); tarsus 4, segments 1-6 with 2/2/0/2/0/2 spines ventrally; tarsus 2-4 with accessory spines among ventral pairs of spines.

5 species. North and west Africa. (One of them known only as a female).

Key to males :

1. Flagellum shaft long, extends above the basal part till after or over the ocular tubercle (Fig. 25 B), its end bent upwards (Fig. 25 B1); Colouration rusty yellow; propeltidium frontally often brownish; opisthosomal tergites with a dark median stripe; pedipalps rusty yellow, its metatarsus and tarsus dark brown to black; legs and malleoli rusty yellow; Body length till 22 mm *O. flavescens*
- . Flagellum shaft short, scarcely extends after the basal part, its end oblique cut (Fig. 25 C1); Colouration: like *O. flavescens*, nevertheless chelicerae with 2 dark longitudinal stripes and opisthosomal tergites without indication of a dark stripe; malleoli white; Body length 14 mm *O. quedenfeldti*

Key to females :

1. Metatarsus of pedipalp ventrally with numerous cylindrical bristles; Colouration as in male; Body length 28-38 mm *O. flavescens*
- . Metatarsus of pedipalp ventrally nearly without cylindrical bristles; Chelicerae, propeltidium rusty yellow, frontally often brownish; opisthosoma pale yellow, only its anterior tergites lightly brownish; pedipalps rusty yellow, metatarsus and tarsus dark brown to black; legs uniformly rusty yellow; malleoli whitish; Chelicer al immovable finger: the intermediate tooth separated from main tooth by a deep gap (Fig. 25 C2); Body length 22 mm *O. quedenfeldti*

Oparbella flavescens (C.L.Koch, 1842) {T} (Fig. 25 A,B,B1)

C.L.Koch, 1842 p.353; Kraepelin, 1901 p.58 (sub *Solpuga*)

Synonyms: *Solpuga* f. C.L.Koch,1842 [Roewer,1934 p.483]

World Distribution: Algeria, Egypt, Libya, Morocco, Togo, Tunisia.

Local Distribution: Egypt: Alexandria.

Ref: 1. *O.f.* Roewer,1934 pp.481-483 fig.306 A,B,B1 *Dmf* Alexandria

Oparbella quedenfeldti (Kraepelin, 1899) (Fig. 25 C,C1,C2)

Kraepelin, 1899 p.214 and 1901 p.67 (sub *Solpuga*)

Synonyms: *Solpuga q.* Kraepelin, 1899

[Roewer, 1934 p.483]

World Distribution: Egypt, Morocco.

Local Distribution: Egypt: Wadi Natron.

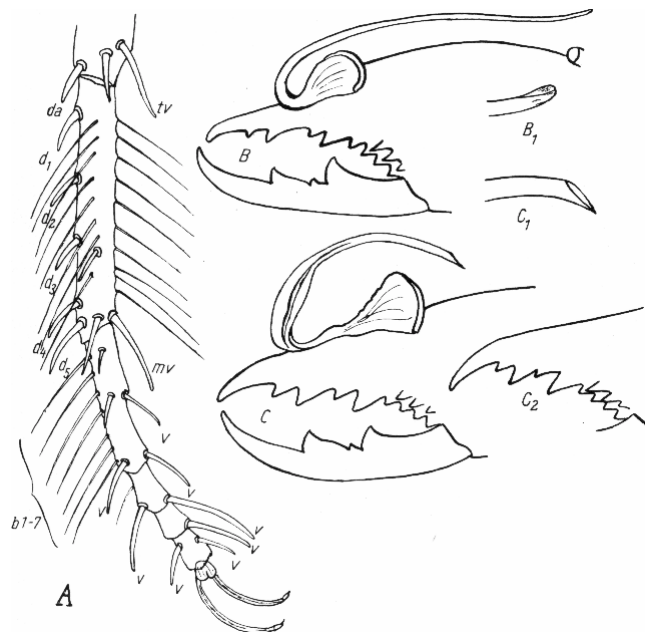
Ref: 1. *O.q.* Roewer, 1934 pp.482-483 fig.306 C,C1,C2 Dmf

2. *O.q.* Roewer, 1941 p.156 Nf Wadi Natron

Fig. 25 *Oparbella flavescens*

A = left leg 2 lateroventrally : tibia (da = 1 dorsal apical and tv = 2 ventral apical spines), metatarsus (d1-d5 = dorsal longitudinal row of spines, mv = ventral apical spine pair), and tarsus (b1-7 = dorsal longitudinal row of spinous-bristles of segment 1 and v = ventral spination of segments 1-4)

B = right male chelicera, prolaterally, B1 = shaft-tip of flagellum, enlarged (after Type).



Oparbella quedenfeldti

C = right male chelicera, prolaterally. C1 = shaft-tip of flagellum, laterally, enlarged. C2 = right immovable finger of female chelicera, prolaterally (after Type). (After Roewer, 1934. fig.306 A,B,C p.481)

Acknowledgments

The author is very grateful to Dr. Jürgen Gruber of Naturhistorisches Museum Wien for the photocopy of Roewer's " Solifugae, ... " (1934) without which the achievement of this work was not possible.

Most of the solpugid specimens in the author's collection were collected by his friends: Mr. Mahmoud S. Abd El-Daiem, Dr. Hassan H. Fadl, Dr. Alaa El-Din A. Moustafa, Mr. Gamal Orabi and Dr. Wolfgang Ullrich. Many thanks to all of them.

References

- Audouin, V. 1825
Explication sommaire des planches d'Arachnides de l'Egypte et de la Syrie, Publiées par Jules-César Savigny. In: Description de l'Egypte ou Recueil des observations et des recherches qui ont été faites en Egypte pendant l'expédition de l'armée française. Histoire Naturelle. Tome Premier 1809. Paris. 4e partie, pp. 99-186. Atlas: pls. 1-9 (Arachnides).
- Benoit, P.L.G. 1964
Contribution à l'étude des Solifuges du Soudan. Ann.Natal Mus. 16: 91-98.
- Cambridge, O.P. 1870
Notes on a collection of Arachnida made by J.K.Lord, Esq., in the Peninsula of Sinai and on the African borders of the Red Sea. Proc.Zool.Soc.Lond., 1870, p.818-823, pl.50.
- Delle Cave, L. & Simonetta, A.M. 1971
A tentative revision of the Daesiidae (Arachnida, Solifugae) from Ethiopia and Somalia. Monitore zool.ital. (N.S.) Suppl.IV: 37-77.
- El-Hennawy, H.K. 1990
Key to Solpugid Families (Arachnida : Solpugida). Serket 2(1): 20-27.
- , 1991
Arachnida of Wadi El-Raiyan (Egypt). Serket 2(3): 81-90.
- Lawrence, R.F. 1953
A collection of African Solifugae in the British Museum (Natural History). Proc.zool.Soc.London 122(4): 955-972.
- Levy, G. & Shulov, A. 1964
The Solifuga of Israel. Israel J.Zool. 13: 102-120.
- Muma, M.H. 1982
Solpugida. In: Synopsis and Classification of Living Organisms. pp.102-104, pls.99-100. McGraw-Hill Book Company, Inc., New York

Roewer, C.F. 1934

Solifugae, Palpigradi, in: "Bronns Klassen und Ordnungen des Tierreichs", Leipzig, Bd.5, Abt.4(4): 1-723.

-----, 1941

Solifugen 1934-1940. Veröff.Deutsch Kol.-Übersee Mus.Bremen, 3(2): 97-192.

Savory, T. 1977

Arachnida (2nd edition). 340 pp. Academic Press.
London. New York. San Francisco

Simon, E. 1880

Descriptions de deux nouveaux genres de l'ordre des Solifugae.
Ann.Soc.ent.Fr., 1880, pp.399-402.

-----, 1899

Arachnides recueillis par M.C.-J.Dewitz en 1898, à Bir-Hooker (Wadi Natron), en Egypte. Bull.Soc.ent.Fr., 1899, pp.244-247.

Tullgren, A. 1909

Solifugae, Scorpiones und Chelonethi aus Ägypten und dem Sudan.
In: L.A.Jägerskiöld (ed.), Results of the Swedish Zoological Expedition to Egypt, 1901, Uppsala. 3(21), A: 1-12.

Turk, F.A. 1960

On some sundry species of Solifugids in the collections of the Hebrew University of Jerusalem.
Proc.zool.Soc.London 135(1): 105-124.

Wharton, R.A. 1981

Namibian Solifugae (Arachnida).
Cimbebasia Memoir No.5 87 pp. 86 figs.
